

Pegs and Floats: The Changing Face of the Foreign Exchange Market

*By Nicholas Carlozzi**

"Dollar Gains Sharply in London." "U.S. Increases Swap Arrangements." "Price of Gold Hits New High."

Such headlines greet readers almost daily on the financial pages of the press. Yet as recently as 10 years ago, these news stories would have been the exception, not the rule. Obviously, international monetary relations have taken on a new look.

During the quarter-century following World War II, the trading nations of the West operated under a largely uniform system of fixed exchange rates for their currencies. But the 1960s saw a series of crises in the foreign exchange market that shook the confidence of international traders and investors in the fixed rate system. And in the early 1970s, a combination of disruptions in

commodity markets and large differences among inflation rates in the trading nations made it all but impossible to manage exchange rates as they had been in the past.

The result? Individual nations now choose the exchange rate policies most compatible with their own economic objectives from a variety of options. In spite of the complexity of this new system, it appears to offer a workable basis for international monetary relations in the decade to come.

A BREAK WITH TRADITION

The industrialized nations of the West entered the 1970s with an international monetary system designed at the end of World War II to promote economic recovery. The aim above all was to prevent the economic chaos that had plagued Europe after the previous war, when currency values fluctuated wildly and produced large-scale economic and political dislocation. To achieve this aim, the United States and its allies

*Nicholas Carlozzi, who received his training in economics at the University of Wisconsin, specializes in international finance and macroeconomics. He joined the bank's research staff in 1978.

agreed to fix the values of their currencies.

How Fixed Rates Worked. The fixed rate system was negotiated at Bretton Woods in 1944 and embodied in the Articles of Agreement of the International Monetary Fund (IMF), an institution established to monitor the exchange rate practices of member nations. Under this system, IMF members (almost all noncommunist nations) followed a uniform exchange rate policy, keeping their currency values within one percent of an agreed upon par value. Par values, the official prices at which members were prepared to trade their currencies, were set initially in terms of gold. But it became an established practice for the U.S. to state the value of the dollar in terms of gold and for other members to compute parities in terms of the dollar. IMF members (except for the United States) then used their dollar holdings when intervening to keep their dollar exchange rates within the agreed upon margins.

If the price of a country's currency neared one percent below the par value, its central bank would use its foreign exchange reserves (mainly dollars) to buy its own currency in the foreign exchange market, thereby increasing its price. Similarly, if the price of its currency rose toward the upper intervention point, the central bank would sell its own currency (buy dollars) until its price fell. When countries found that intervention involved too large a change in their foreign currency reserves, they typically would change the par values of their currencies (see THE ADJUSTABLE PEG).

This policy of pegging foreign exchange rates in the exchange market became a less viable strategy as financial markets in the developed nations grew and became more tightly linked through international capital flows.¹ As nations began to experience widely different rates of inflation in the 1960s, which produced different interest rates and

investment incentives, newly mobile capital began to flow into the nations that had higher nominal interest rates. These capital flows continued until the returns from higher interest rates were offset by increases in exchange costs brought about by adjustments in exchange rates. To the extent that exchange rates were forced toward their bounds, governments had to buy or sell currencies in the foreign exchange market, a process which involved them in ever larger transactions.² Ultimately, central banks were called upon to intervene to the tune of *billions* of dollars in the space of a few days. But many nations were unwilling to continue such massive intervention. In the words of one observer, "What the system lacked was both a clear assignment of responsibility for initiating [exchange rate] adjustment and a crisis-proof method of effecting adjustment."³ The system

to convert financial assets denominated in one currency into assets denominated in some other currency. During the 1960s and 1970s, the development of the Euro-currency market and the loosening of capital controls substantially increased the mobility of capital among the major developed nations. And although some nations continue to enforce capital controls, capital markets are linked more closely today than at any time in recent history.

² As international capital markets grew, the magnitude of funds that could be moved cheaply and quickly in anticipation of parity adjustments strained the resources of the central banks and forced them to change exchange parities more often. For example, suppose that the franc price of dollars was approaching its lower intervention point and speculators expected the pressure for the appreciation of the franc against the dollar ultimately to cause a reduction in the franc-dollar parity. Speculators with dollar denominated assets would attempt to trade them for franc denominated assets in anticipation of the parity adjustments. Such speculative flows would place further downward pressure on the exchange rate and require even greater government intervention. The closer the rate to the margin and the more imminent the expected parity change, the larger the resulting capital flows would be and the more difficult the job of intervening to support the current parity.

³ John Williamson, *The Failure of World Monetary Reform, 1971-1974* (New York: New York University Press, 1977), p. 51.

¹ In the immediate postwar period most nations restricted international capital flows, making it difficult

THE ADJUSTABLE PEG

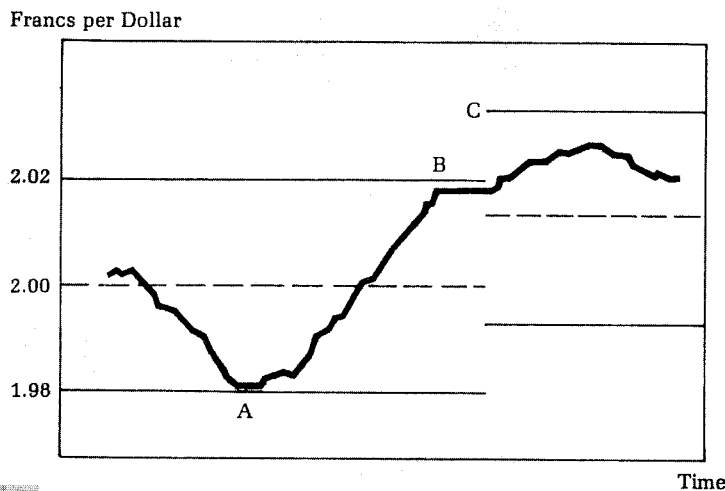
The levels of exchange rates are determined by demands for and supplies of currencies. These demands and supplies arise from private and governmental transactions. Private demands and supplies are occasioned by flows of goods, services, and capital. Governmental transactions in the exchange market are determined by exchange rate policy.

Suppose, for example, that the par values of the U.S. dollar and French franc were \$35 and 70 French francs per ounce of gold. Then the franc-dollar parity level (the official price of the dollar in terms of the franc) would be two francs per dollar. Under the adjustable peg the upper and lower intervention prices required by one-percent margins would be 2.02 and 1.98 francs respectively. The French government would intervene in the foreign exchange market to keep the exchange rate (the franc price of dollars) within this range.

Beginning at the exchange parity, a spontaneous increase in private demand for francs would cause the franc to appreciate (the franc price of dollars to fall). If private franc demand continued to increase and the franc-dollar rate fell to the lower intervention point, the French government would begin to supply francs to satisfy the increased demand and keep the rate above the lower limit (Point A in the figure below). The government would sell francs for dollars in the exchange market. If the private franc supply was increasing over time instead, the government would sell dollars for francs to keep the exchange rate below its upper limit (Point B).

With persistent excess franc supply at the upper intervention point, the French government might choose to adjust the parity rather than to keep intervening. An official devaluation of the franc would shift both the parity and the intervention band upward (Point C).

THE FRANC PRICE OF DOLLARS



had achieved its main objective—the postwar economic recovery of Europe and the Far East. But now, clearly, something else was necessary.

The End of an Era. In the absence of an agreed upon program to reform the system, these monetary crises resulted in a series of stopgap measures. One crucial alteration was the action by the U.S. government to halt the conversion of dollar holdings of foreign monetary agencies into gold. Later, in March 1973, after members of the IMF widened the intervention bands (to 2.25 percent) and temporarily allowed the exchange rates of a few nations to move freely in response to market forces (by suspending the parity and removing the intervention requirements), the entire system collapsed. All of the major developed nations allowed their currencies to float and began to look for a successor to fixed rates.

In 1978, after four years of negotiation, the members of the IMF adopted the Second Amendment to the Fund's Articles of Agreement. Unlike the Bretton Woods system, the Second Amendment allows each member to choose from a wide range of exchange rate policies, provided that certain good-faith principles are observed.⁴ Each nation is free to determine the degree of exchange rate flexibility that is consistent with the structure of its economy and its domestic economic objectives.

⁴Under the Second Amendment, the members of the IMF are free to follow any exchange rate policy that conforms to three principles: first, exchange rates should not be manipulated in order to prevent effective balance of payments adjustments or to gain an unfair competitive advantage over other members; second, members should act to counter disorderly conditions in exchange markets of a short-term nature; and finally, when they intervene in the exchange markets, members should take into account the interests of other members. The IMF is authorized by the amendment to play a surveillance role and to consult with any member that is suspected of violating these principles. International Monetary Fund, *Annual Report 1977* (Washington: International Monetary Fund, 1977), pp. 45-46.

PEGS AND FLOATS

The design of an effective mechanism of government intervention to limit fluctuations in exchange rates has been an important theme in postwar international monetary relations. Stable rates are assumed to encourage both world trade and investment by reducing the risks of transacting in foreign currencies. But the benefits of increased trade and investment must be weighed against the costs of government involvement in the foreign exchange market. The expense of maintaining foreign exchange reserves and engaging in market intervention is the most visible cost. To it must be added the inefficiencies introduced by capital controls and other restrictions necessary to reduce exchange rate variability.

In the weighing of costs and benefits, different policy choices result from different economic structures and objectives. The developed economies generally find that pegging is inconsistent with their desires to pursue somewhat independent courses in dealing with inflation, employment, and other domestic policy issues. A more flexible policy allows them to make their domestic policy choices with less dependence on the corresponding policies of other nations. The developing nations, with their close trading ties to larger neighbors, are almost alone in finding that pegging is a workable exchange policy. This is partially explained by the fact that they rely on private capital flows to a much lesser extent than developed nations and therefore find them much easier to control. While the exchange rate practices of no two nations are identical, two basic types of policies can be identified—pegging and floating.⁵

Pegging. Any nation that maintains the exchange rate of its currency within a well-

⁵Detailed descriptions of each member's exchange rate policies are available in the *30th Annual Report on Exchange Restrictions: 1979* published by the IMF.

defined range relative to some other currency or group of currencies is classified as a pegger.

Pegging to a single currency is attractive to developing nations whose trade and financial ties are primarily with a single larger trading partner. By pegging the value of its currency to that of its partner, a small nation can reduce changes in the prices of imports and exports that stem from changes in the value of its currency in relation to that of its partner. The result could be greater stability of employment and output in the exporting and importing sectors, which could have a strongly favorable effect on a country's economic development. For example, the nation of Senegal, which trades primarily with France, pegs the value of its currency to the French franc.

Pegging to a group or basket of currencies is an alternative for a small nation with more than one major trading partner. The basket

consists of prescribed quantities of foreign currencies in proportion to the different shares of trade the country carries on with its different trading partners. Once the basket is defined, the domestic currency value is calculated using the exchange rates of the foreign currencies in the basket. By pegging the domestic currency value of the basket, fluctuations in export or import prices caused by changes in the exchange rates included in the basket can be averaged out (see THE BASKET PEG). Sweden, for example, uses a basket of the 15 currencies of its major trading partners in the management of its exchange rates.

Many nations choose to peg the local currency value to the Special Drawing Right (SDR), a currency basket defined by the IMF (see THE SPECIAL DRAWING RIGHT overleaf), instead of constructing their own currency baskets. Adopting a standardized basket, such as the SDR, may make sense under any

THE BASKET PEG

Consider the case of a small developing nation with currency unit S. This nation has two trading partners, the U.S. and France, each of which purchases half of its exports and provides half of its imports. In order to reduce variations in the average price of imports or exports caused by exchange rate fluctuations, nation S chooses to peg its domestic currency value to a basket that includes U.S. dollars and French francs. Assume that the rates of exchange (units of domestic currency per unit of foreign currency) of currency S for the dollar and franc are (S/\$) and (S/FF) respectively. At the start (S/\$) is one, (S/FF) is one-half, and the basket contains one dollar and two French francs. In this case the shares of the domestic value of the basket accounted for by the dollar and franc are equal. The domestic currency value of the basket is defined by the equation:

$$\text{Basket Value} = \$1 \times (\text{S}/\$) + \text{FF}2 \times (\text{S}/\text{FF}).$$

Suppose that the S government is committed to maintaining the domestic currency value of the basket within one-percent margins. If (S/FF) rises (scarcity of the franc relative to the S currency) so that the basket value approaches its upper intervention point, the S government must intervene. It can either sell francs for S currency to induce a fall in (S/FF) or sell dollars for S currency to induce a fall in (S/\$). Both reduce the home currency value of the basket.

Where imports and exports are received from or shipped to these two trading partners, this basket peg does the best job of stabilizing average export and import prices. Pegging to the dollar or franc alone would not stabilize average prices to the same extent, although some individual prices might be observed to vary less. Since the key to the effectiveness of the basket peg is that it takes trading patterns into account, the definition of the basket must be revised when these relations change.

THE SPECIAL DRAWING RIGHT

The Special Drawing Right (SDR) is an international reserve asset administered by the IMF and used by member governments to settle accounts among themselves. The SDR is a currency basket that comprises prescribed amounts of 16 member currencies. The amounts of each currency included in the definition were fixed as of July 1, 1978, and are those of the 16 members that were the largest exporters of goods and services during the 1972-76 period. The definition of the basket is revised every five years to take changes in trading patterns into account. The quantities of the 16 currencies included in the current basket and the approximate percentage contribution of each to the total value of the SDR (as of June 30, 1978) are:

SDR COMPOSITION

Currency	Amount	Percent
U.S. dollar	.40	33 %
Deutsche mark	32	12.5
Japanese yen	21	7.5
French franc	.42	7.5
Pound sterling	.05	7.5
Italian lira	52	5
Netherlands guilder	.14	5
Canadian dollar	.07	5
Belgian franc	.6	4
Saudi Arabian riyal	.13	3
Swedish krona	.11	2
Iranian rial	1.7	2
Australian dollar	.017	1.5
Spanish peseta	1.5	1.5
Norwegian krone	.10	1.5
Austrian schilling	.28	1.5

of several conditions—if, for example, the trading pattern of the nation is close to that reflected in the SDR or if political considerations make pegging to a single currency or the determination of an appropriate basket difficult. The nation of Guinea, which trades primarily with the United States, Canada, France, Germany, and Italy, pegs its currency to the SDR, in which these nations' currencies are strongly represented.

Floating. Under a managed float, market forces are allowed to determine exchange rate trends over the longer run while govern-

ment intervention is used to reduce the day-to-day variability of market rates. Some nations follow a policy of leaning against the wind—intervening in order to reduce daily fluctuations in their exchange rates without attempting to adhere to any target rate. Others choose target exchange rates and intervene in order to support them. Even nations that do target exchange rates usually do not reveal their targets. Thus, they discourage speculation against these targets and retain greater flexibility to adjust them.

One way for managed floaters to estimate

Because this asset is a composite of many different monetary units, its value fluctuates with movements in exchange rates. To compute its value in terms of a particular currency, it is necessary to know the exchange rates of that currency against each of the currencies included in the basket. The dollar value of the SDR as of December 31, 1979, is shown below. The quantities of each currency are multiplied by the dollar-per-foreign-unit exchange rate to give the dollar value of each component. The total dollar value for December 31 is reported at the bottom of the third column.

SDR VALUE COMPUTATION*

Currency	Currency Quantity	x	Dollars per Foreign Unit	=	Dollar Value
U.S. dollar	.40		1.00		\$.400
Deutsche mark	.32		.578		.185
Japanese yen	21.		.0042		.088
French franc	.42		.249		.104
Pound sterling	.05		2.22		.111
Italian lira	52.		.0012		.065
Netherlands guilder	.14		.525		.073
Canadian dollar	.07		.856		.060
Belgian franc	1.6		.036		.057
Saudi Arabian riyal	.13		.297		.039
Swedish krona	.11		.241		.027
Iranian rial	1.7		.014		.024
Australian dollar	.017		1.11		.019
Spanish peseta	1.5		.015		.023
Norwegian krone	.10		.203		.020
Austrian schilling	.28		.080		.023
Total					<u>\$1.32</u>

*Based upon exchange rates reported for December 31, 1979, in the IMF Survey of January 21, 1980.

a target exchange rate is to follow statistical indicators that respond to the same economic forces as the exchange rate trend. Then, when the values of the indicators change, the exchange rate target can be adjusted accordingly. Among these indicators are differential rates of inflation—different rates of price changes in different nations. Other indicators are levels of official foreign reserves, changes in the level of foreign reserves, and persistent imbalances in international payments accounts. Whatever indicator is chosen, periodic changes in policy

are tied to changes in the indicator. Portugal, for example, periodically revises its exchange rates by using an indicator formula based on the inflation differentials between Portugal and its major trading partners.

A Hybrid Policy. Some nations attempt to obtain the benefits of both pegging and floating. Under this mixed arrangement, rather than attempting to manage the float of a single currency, they manage a joint float of several currencies which are tied together by fixed exchange rates. This is a hybrid policy, resembling the fixed rate approach

when relations within the trading group are considered and a managed float when relations between an outside nation and the group are examined. But it requires members of the group to surrender some economic autonomy. Thus a hybrid policy will be most attractive to nations that wish to maintain or foster close economic and political ties with one another.

Such an arrangement is the latest in a series of measures taken by the Western European nations in order to work toward economic integration. Eight European nations have joined the European Monetary System (EMS) joint float, and Britain is considering membership.⁶ With one exception, Italy, all members peg their bilateral exchange rates within the same 2.25-percent margin. Foreign exchange intervention to maintain the bilateral rates within the group is conducted in group currencies. Adjustments of the bilateral central rates, or parities, are subject to the approval of the participants. Exchange rates of the group currencies with outside currencies are managed through joint intervention by the participants using reserves of outside currencies.⁷

The members of the EMS expect their cooperative exchange rate policy to develop into a regional monetary system during the next few years. The system would feature a European Monetary Fund (EMF), which would be designed along the lines of the IMF to provide credit for foreign exchange intervention and to establish a forum for consultation on economic issues of common interest.

Whatever policy is chosen, whether a peg, a float or a hybrid (see Appendix), the

Second Amendment gives member nations the flexibility to respond to changes in their economic circumstances by making adjustments in their exchange policies.⁸ But some dissatisfaction with the behavior of the exchange market under this regime has been voiced. An unanticipated conflict has developed between the desire to pursue independent domestic monetary and fiscal policies and the desire for unrestricted international capital flows.

AUTONOMY VERSUS CAPITAL MOBILITY

One of the arguments proposed during the 1960s favoring a change to flexible exchange rates suggested that this would allow members more policy independence or autonomy. Since 1973, most of the developed nations have chosen to float their exchange rates so that they could pursue independent domestic economic policies. Recently, however, many floaters have found it much more difficult to practice this autonomy than they expected when the reforms were originally proposed. In effect, they underestimated the extent to which international money and capital markets have become linked and the consequences of this capital market integration.⁹ Now, for example, a sharp rise in U.S. interest rates tends to be followed by capital inflows, dollar appreciation, and higher interest rates

⁸The current importance of floating exchange rates, however, should not be underestimated. Although fewer than one-third of the members currently float their currencies, IMF calculations indicate that four-fifths of world exports are shipped by these nations. International Monetary Fund, *Annual Report 1978* (Washington: International Monetary Fund, 1978), p. 38.

⁹John Kareken and Neil Wallace describe the consequences of capital mobility, floating exchange rates, and economic autonomy. They conclude that this is not a workable combination of policy objectives. As alternatives they suggest floating rates, capital immobility, and autonomy; or fixed rates, capital mobility, and policy coordination. "International Monetary Reform: The Feasible Alternatives," *Quarterly Review*, Federal Reserve Bank of Minneapolis, Summer 1978, pp. 2-7.

⁶The current members of the EMS are Belgium, Denmark, the Federal Republic of Germany, France, Ireland, Italy, Luxembourg and the Netherlands.

⁷The EMS also incorporates a divergence indicator, which signals the overall strength or weakness of each currency. Excellent descriptions of the operations of the system are contained in *The Economist*, December 9, 1978, pp. 20-21, and *Euromoney*, January 1979, pp. 44-51.

abroad. Given a choice between the pursuit of independent economic policies and the efficiencies of the free flow of capital, national policymakers recently have expressed a desire to coordinate domestic economic policies to a greater extent than in the past.¹⁰

WHAT'S AHEAD IN THE 1980s?

The evolution of international monetary relations that is likely to occur during the 1980s will take place along a number of fronts. The move toward joint floating and the resulting coordination of the policies of group members can be expected to continue. Even some nations that are not closely linked

in a currency group can be expected to cooperate in the determination of their economic objectives to a much greater extent than in the past. And the United States is likely to continue taking an active part in the management of its exchange rates, in contrast to the passive role it played in the Bretton Woods system.

There may be further reforms aimed at controlling the stock of international reserves available to IMF members. These reforms could include the increased use of the SDR as a means of payment among member governments, the possibility of a substitution account to promote the diversification of international reserve holdings, and the introduction of government regulation in the Eurocurrency financial markets.

As innovations in communications and transportation continue to bring nations closer together, it will be necessary for the international monetary system to maintain both its flexibility and diversity. Hopefully, enough of both will be present in order to stabilize and promote the growth of the world economy as effectively as the Bretton Woods system did in the past.

¹⁰Both Guido Carli and E. M. Bernstein identified the need for greater policy coordination at the October 31 - November 1, 1979 conference on the International Monetary system sponsored by the Global Interdependence Center. Carli stressed the need to cooperate in the creation of international liquidity and the control of the Eurocurrency credit markets. Bernstein emphasized the significance of the moves by the United States on November 1, 1978 and October 6, 1979 to adopt an active exchange policy and to take these external goals into account in the determination of domestic monetary and fiscal policies.

APPENDIX . . .

... CURRENT EXCHANGE

The 140 members of the IMF are grouped in the figures below according to the exchange rate policies they followed as of December 31, 1979. On that date, 94 members reported that their exchange rates were pegged and 45 reported that their exchange rates were governed by other policies (floating).*

The pegged group includes all currencies whose exchange rates were maintained within a well-defined range relative to a single foreign currency or a basket of foreign currencies. Sixty of the pegged currencies were tied to a single currency. Forty-two nations pegged to the U.S. dollar, 14 to the French franc, and one to the pound sterling. The currencies of Lesotho and Swaziland were pegged to the South African rand and the currency of Equatorial Guinea was pegged to the Spanish

PEGS

Currency Pegged to

Single Currency				Basket		
U.S. Dollar		£ Sterling	French Franc	Other	SDR	Other Composite
Bahamas	Libya	Gambia	Benin	Equatorial	Burma	Algeria
Barbados	Nepal		Cameroon	Guinea	Guinea	Austria
Botswana	Nicaragua		Central African	Lesotho	Guinea-	Bangladesh
Burundi	Oman		Republic	Swaziland	Bissau	Cape Verde
Chile	Pakistan		Chad		Jordan	Cyprus
Costa Rica	Panama		Comoros		Kenya	Fiji
Djibouti	Paraguay		Congo		Malawi	Finland
Dominica	Romania		Gabon		Mauritius	Kuwait
Dominican Rep.	Rwanda		Ivory Coast		Sao Tome	Malaysia
Ecuador	St. Lucia		Madagascar		& Principe	Malta
Egypt	St. Vincent		Mali		Seychelles	Mauritania
El Salvador	Somalia		Niger		Sierra Leone	Morocco
Ethiopia	Sudan		Senegal		Uganda	Norway
Grenada	Surinam		Togo		Viet Nam	Papua New
Guatemala	Syrian Arab		Upper Volta		Zaire	Guinea
Guyana	Republic				Zambia	Singapore
Haiti	Trinidad					Solomon Is.
Honduras	& Tobago					Sweden
Iraq	Venezuela					Tanzania
Jamaica	Yemen Arab					Thailand
Korea	Republic					Tunisia
Lao People's	Yemen People's					
Dem. Rep.	Dem. Rep.					
Liberia						

peseta. Fourteen of the members that pegged maintained the value of their currencies in terms of a basket defined by the SDR, and twenty adopted other basket definitions.

Thirty-four of the 45 members that did not peg intervened at their own discretion to limit fluctuations in their otherwise floating exchange rates. Three members used economic indicators to determine the target levels of their exchange rates. And eight participated in a cooperative exchange arrangement (the European Monetary System).

*As reported by the IMF Treasurer's and Exchange and Trade Relations Departments. Information concerning the exchange arrangements of Democratic Kampuchea (Cambodia) is not available.

FLOATS

Float Governed by

Indicators	Cooperative Exchange Arrangements		Other
Brazil	Belgium	Afghanistan	New Zealand
Colombia	Denmark	Argentina	Nigeria
Portugal	Federal Republic of Germany	Australia	Peru
	France	Bahrain	Philippines
	Ireland	Bolivia	Qatar
	Italy	Canada	Saudi Arabia
	Luxembourg	China (Taiwan)	South Africa
	Netherlands	Ghana	Spain
		Greece	Sri Lanka
		Iceland	Turkey
		India	United Arab Emirates
		Indonesia	United Kingdom
		Iran	United States
		Israel	Uruguay
		Japan	Western Samoa
		Lebanon	Yugoslavia
		Maldives	
		Mexico	